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# Exploring the Futures of Mobiles for Social Development Using Ethnographic Futures Research

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# EXPLORING THE FUTURES OF MOBILES FOR SOCIAL DEVELOPMENT USING ETHNOGRAPHIC FUTURES RESEARCH

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## Abstract

*As new technologies such as mobile phones impact peoples' daily lives, interest into their potential is also growing. In this research paper we aim to identify and explore how a particular research approach, in this instance, ethnographic futures research (EFR), can be utilized for future predictions of mobiles phones in social development activities in developing countries. The paper describes the process and offers reasoning for utilizing this approach. By undertaking this research, the benefits are that academics will learn of an approach that will allow the study of and understanding social development activities achieved by novel mobile applications. For practitioners, such research offers the potential of obtaining a rich, simple and clearer understanding of mobile application development. By obtaining such an understanding, regions around the globe can be targeted and diffusion strategies leading to increasing mobile phone users will occur. By applying EFR it is concluded that there is definitely a need for a different way of thinking about how mobile phone services should be created and deployed to marginalized communities to avoid the unsustainable models used for the initial tele - center deployments over a decade ago.*

**Keywords:** Ethnographic Futures Research, M4SD, Mobile for social development, EFR, P-EFR, social development, mobile technology, future research, Participatory EFR, research methods

# Introduction

Web based and mobile communication applications have appeared in our daily life and become synonymous with it. As the International Telecommunications Union (ITU) recently found, global mobile phone users are increasing at a phenomenal rate, with recent numbers approximately four billion(GSM, 2009). However, it can also be noted that most of the new connections are occurring in emerging markets such as China, India, Africa and Latin America (ITU 2009). Of these, Africa's mobile phone industry is viewed to be growing at nearly double the global rate (Stump et al 2008). Concurrently, Portable Computer (PC) penetration and Internet diffusion strategies remain low (ITU 2009). This is profound at many levels, but from a digital inclusion perspective it implies using a minimal telecommunication infrastructure such as, Global System of Mobile Communication (GSM) networks and $30 mobile phones, billions of people including the underprivileged segment of the population in some of the most deprived communities potentially have access to a wide variety of digital information and resources. It is well known that most of the developing world has not benefited from the Internet revolution in the same way as the developed world, with some of the factors cited including, infrastructure and cost (Mitchell , 2002). Nevertheless there is a growing trend of internet access via mobile phones in developing countries around the globe. Opera, a mobile browser provider reported that in 2008 some countries in Africa have experienced between 1000% - 3000% increase in mobile web access (Opera, 2008). If this trend continues, there is the possibility that mobile phone users in developing countries could surpass the PC Web revolution directly to the Mobile Web era. For marginalized groups and poor citizens to have real benefits from Mobile Web services, certain conditions need to be met, these could be low cost network access, usable and useful information and services (Boyera, 2008). Due to the potential benefits and rewards offered by providing mobile web services, there are a variety of efforts underway from a diverse group of organizations to capitalize on the growth of mobile phones. For instance, mobile based services are currently focused on banking, communication and social entrepreneurs services (World Bank, 2008) and device manufacturers such as, Nokia, Microsoft and Vodafone have all developed initiatives to contribute to this emerging theme. In terms of social entrepreneurs' services, the World Wide Web (W3) Consortium Mobile Web Initiative has created a working group called (M4SD) to investigate how Mobiles can impact social development[1]

However, from these discussions, it can be learnt that the question still remains: At what rate will the mobile phone market grow and what is the potential role of mobiles for addressing social problems? Therefore, the aim of this study is to explore how a particular research approach, in this instance, Ethnographic Futures Research (EFR) can be utilized for future predictions of the role of mobiles phones in social development activities in developing *countries*. There is a view that the dominant research philosophy over the last decade has been to develop cumulative, theory-based research in order to offer prescriptions (Iivari 2007), but some believe that this attempt at developing theory-with-practical-implications' research strategy has failed to produce results that are of real practical interest (Iivari et al.2004). The ERF approach was chosen for this study to evaluate the feasibility of this less used mode in IS research over more established approaches. EFR was created by Textor almost three decades age (Textor, 1980, 1990a, 1990b, 1995; Bell, 1997; Wolcott, 1999). EFR is a qualitative method of inquiry that was specifically designed for building scenarios of the future. For this research EFR was used in a participatory format to systematically extract the perceptions of the current state of mobile technology for social development so as to allow stakeholders to build visions of the driving forces that could influence and decide the future. This study was conducted during the W3C Workshop on the Role of Mobile Technologies in Fostering Social and Economic Development, held in Maputo, Mozambique, February 2009. The workshop was part of the EU FP7 project Digital World and was sponsored by UNDP, Nokia, the World Wide Web Foundation, Bharti Telesoft UNESCO, Opera Software, and Microsoft. An adapted version of EFR, also known as Participatory EFR (P-EFR) was used at the workshop. P-EFR is a modified version of the EFR method specifically adept at identifying possible and meaningful anticipatory perceptions of the future grounded in a particular socio-cultural context. The main difference between the two approaches is the structure of the interviews. EFR specifically requires face-to-face, one on one interview's, while P-ERF aims to improve the data elucidation process by using focus groups or group interviews.

By undertaking this research, the academic benefits are the learning of an approach that will allow the study of and understanding social development activities achieved by novel mobile applications. For practitioners, such research offers the potential of obtaining a rich, simple and clearer understanding of mobile application development

[1] http://www.w3.org/2008/MW4D/#docs

landscape. By obtaining such an understanding, regions around the globe can be targeted with appropriate diffusion strategies leading to increasing mobile phone usage for purposes other than voice conversations.

This paper is structured as follows. The first section will provide a background on research methods applicable for development research. It discusses Grounded Theory, Action Research and EFR and discusses how each of these approaches is an appropriate method for developmental activities. Following that there is a discussion on the particular strand of EFR called Participatory EFR which was used in this study and describes the process for using the method. Thereafter, there are explanations of how Participatory EFR was used in this study to elicit the Future of Mobile for Social Development over a 5 year timeline. Then, there is an evaluation of the Participatory EFR model, which is followed by the conclusions.

## Background: Research Methods for Development Activities

Previous Information Technology (IT) researchers have used Ethnographic Futures Research (EFR) as a method for studying technological phenomena's in development work, this research considers mobiles to be a subset of IT. IT and EFR has been used for IT related studies (Mitchell M, Gillis 2006; Gillis 2008a; Gillis 2008b); therefore, it was considered appropriate to utilize the approach. The benefits that EFR offers for development work are as follows (Houe, 2000):

- EFR has the ability to combine the long term, development perspective as enhancement of Human Rights and Democratization (HR&D), with the shorter, closer, community aspect of development, as utilization of possibilities within the local community.
- EFR reveals knowledge and starts an empowerment process.
- EFR establishes goals and offers an understanding of the processes that lead to the fulfillment of these goals; thereby creating a foundation for further development.

Mobile technology is often publicized as the technology that will make a significant impact on digital inclusion and a key to social development activities (Donner, 2008). While mobile technology may offer tools that people can use, it should not be overrated as the solution to every problem. Developing usable Mobile Information Systems (IS) requires the availability of suitable IT artifacts. There are numerous ways of deploying mobile services and applications such as Wireless Access Protocol (WAP) sites, Mobile browsers, Short Messaging Services (SMS), Video, and Multimedia Messaging services (MMS). This means that careful consideration should be given to issues such as cultural aspects before particular devices are selected and deployed (Biljon , Kotzé 2008). Such issues have also been addressed previously, where the emphasis has been upon the affective designing of IS/IT artefacts such that there is an improvement in compatibility, usefulness, and ease of use (Benbasat and Zmud 2003, p. 191). However, there are instances that a technology may not be applicable to certain situations (Slowikowski andJarratt (1997). For example, the use and adoption of mobile technology in Japan is different to USA or Germany; therefore, while implementing solutions in developing countries of Africa or Asia (Shintaro (2005), careful consideration must be given to the role culture will play in the success or failure of a mobile application (Biljon , Kotzé 2008). Similar to the computing discipline, mobile speciality is specifically interested in IT artefacts (Dahlbom 1996; Orlikowski and Iacono 2001; Benbasat and Zmud 2003). Mobile artefacts can best be described using Dahlbom's (1996) interpretation:"*people and their lives are themselves artefacts, constructed, and the major material in that construction is technology*" (p. 43)....: "*When we say we study artefacts, it is not computers or computer systems we mean, but information technology use, conceived as a complex and changing combine of people and technology"*. From this it can be learnt that it is important to consider the ways that artefacts affect daily lives in order to understand how the actual devices, applications, icons, networks can be intertwined to sustainably support their way of life. For this purpose, there are two alternative qualitative research models, Grounded Theory (GT) and Action research (AR) that would be appropriate for studying mobiles leading to social development. Glaser and Strauss (1967) created grounded theory as a practical method for conducting research that concentrates on the real phenomenon by analyzing the "*the actual production of meanings and concepts used by social actors in real settings*" (Gephart, 2004: 457). GT proposes that new theory can be developed with careful attention to the contrast between "*the daily realities (what is actually going on) of substantive areas*" (Glaser & Strauss, 1967: 239) and the interpretations of those daily realities made by those who participate in them (the "actors"). GT is considered to be a rigorous method but there are instances where its use can be questioned (Suddarb, 2006). Although it would be appropriate to use GT for this research, based on the criteria 'fit for purpose', it is still not beneficial. The reasons for employing GT from a theoretical perspective include examination of the real phenomenon; hence, considering what is actually going on; GT allowing the use of a

theoretical lens that highlights differences; for example, GT would be able to decipher the difference between what is actually the main use cases for mobiles phones on the African continent (Voice, SMS, peer to peer currency exchange) as opposed to what we actually think people in the Africa do with phones (banking, crop checking, web browsing). However from a practical and implementation point of view there are serious concerns. Suddarb (2006) describes GT as the product of considerable experience, hard work, and creativity. Many of the primary techniques of grounded theory research are developmental, meaning that the quality of their application improves with experience. Further, the developmental nature of grounded theory research occurs from the researchers' ability to interpret patterns in qualitative data (Turner, 1981). Hence, GT is a process that depends upon the sensitivity of a researcher to tacit elements of the data or meanings and connotations, and many researchers attest to the interpretation of data occurring subconsciously, as a result of their constant "immersion" or "drowning" in data (Langley, 1999). In the research study reported in this article, the focus was not on identifying a researcher with previous experience in a particular method, but to identify an appropriate method that could be easily adapted by a multidisciplinary research team. Although members of the research team were familiar with GT, using the model would have purely been from a data analysis perspective and this again would violate one of the Suddarb (2006) GT misconceptions.

Action Research (AR) is another method that has potential for researching qualitative development activities. This is due to its focus on real world problems and its ability to provide researchers with a rich body of field data for knowledge building (Kock, 2003). Susman and Evered (1978) characterized six properties of action research:

1. it is future oriented,
2. it is collaborative,
3. it implies system development,
4. it generates theory grounded in action,
5. it is agnostic and
6. it is situational.

Although all these properties are important features for development activities, the point of AR being future oriented is critical to this discussion, as the research team was tasked with more than just understanding a phenomenon. The team's task was to actively participate in identifying a desired future. Susman and Evered (1978) clarify the first property (action research is future oriented) as follows: "*In dealing with the practical concern of people, action research is oriented toward creating a more desirable future for them*". Jarvinen (2007) also discusses the properties of Action research and emphasizes the utility aspect of the future system from the people's point of view. Oquist (1978) analyzed the kind of knowledge action research produces and its relation to different schools of philosophy of science. Therefore, action research is considered to be a method that elucidates the production of knowledge to guide practice, with the adaptation of a given reality happening in conjunction with the actual research process. Jarvinen (2007) also purports that within action research, knowledge is generated and simultaneously reality is modified based on the generated knowledge. Thus, it is clear from the aforementioned discussion that either of these methods would be appropriate for the research team, but other reasons for employing a research approach was influenced by the possibility of being able to identify a variety of future scenarios from the data, the ease of use of the model and the applicability of the output to practice who were sponsoring the research.

### *Ethnographic Futures Research (EFR) as an IS Method*

EFR is a distinct and standalone model for qualitative enquiry and has been used in numerous studies (Mitchell 2006). Theoretically, EFR is often described as a hybrid method of inquiry of future research and ethnography (Textor, 1990b). Futures Research can be described as a *"systemic inquiry into alternative futures that are considered to be possible or probable for a given population"* (Textor, 1990b: 139). When a novel product or service is introduced within the market and economy, it is important to understand the scope and purpose of future research and Textor (1990b) explains that Futures Research serves the following purposes (p. 139):

1. Describes alternative futures that are possible or probable for a particular population.
2. Determines the state of our knowledge (or uncertainty) about this or that possible future.

3. Identifies implications and possible consequences of this or that possible future.
4. Provides early warning signs of undesirable possible futures.
5. Understands underlying change processes.

EFR is a method of qualitative inquiry that derives theoretical meaning from research approaches similar to other Information Systems (IS) qualitative research methods such as, Action Research, ethnography or grounded method. In essence, the EFR approach "*is a type of ethnography adapted to the needs and constraints of Futures Research*" (Textor, 1985: P 11). There have been comparisons drawn between EFR and the 'grounded theory' approach" (Textor, 1985: 12] because an EFR approach develops a perspective on its subject of inquiry through a systematic, inductive investigation similar to the grounded method (Mitchell, 2009). Strauss and Corbin (1998) describe Grounded studies as a qualitative approach that generates a theory of *"well-developed categories (e.g., themes, concepts) that are systematically interrelated through statements of relationship to form a theoretical framework" (p. 22).*

Grounded theory discovers theories from the hypotheses and concepts that emerge from data. Each is systematically verified with, and validated by, the data (Glaser & Strauss, 1967: 6). It "*begins with observations and proposes patterns, themes, or common categories"* (Babbie, 1998: 28).

EFR is different to grounded theory due to the use of speculation. GT explicitly requires any emergent theory to be validated with the collected and analyzed data. Contrastingly, EFR requests details about an individual's speculation on the future. Textor (1990b) *describes the epistemological foundation of EFR as: There are no future facts – only facts about the present and past. The future is simply a construct and has no independent or objective existence. . . . What does exist, though, are a person's present set of images as to possible or probable future cultures, and his or her preference among those hypothetical cultures. … It is these images and preferences that an EFR project elicits, describes, analyzes, interprets, and diagnoses*. (p. 142)

One of the crucial differences between Futures Research and other methods that aim to study the future is that FR does not involve prediction (Textor (1990a). Instead of making predictions, a typical FR approach is a practice in the art of anticipation, which is defineds as: *"the building of reasonable, plausible, conditional visions of the future. …These take the form of projections, forecasts, and scenarios"* (Textor, p38).

Future Research is not without fault and a perceptible drawback of the general FR approach is that it does not seek to situate anticipations about the future into the appropriate context of the subject's culture. To tackle this limitation, Textor (1980, 1985, 1995) describes an adaptation of FR that specifically takes into consideration the aspect of culture, which is called Cultural Futures Research. "Cultural Futures Research (CFR) is a component of Futures Research (FR) that utilizes concept of culture as a central theme" (Textor, 1990b: 140). EFR is one such method by which the cultural futures researcher can go about her or his task" (p. 141). The relationship between EFR and CFR is similar to the relationship between ethnography and cultural anthropology (Textor, 1980, 1990b, 1995). In the same manner that cultural anthropologists conventionally use ethnography to study an extant culture, EFR can also be used to elicit from members of an extant social group their images and preferences (cognitions and values) with respect to possible or probable future cultures for their group (Textor, 1990b: 141)

## Conducting Participatory EFR

The main distinction between Participatory EFR and EFR (illustrated in Table 1) is that instead of having face-to-face, one-one semi structured interviews; a facilitator directs semi structured interview questions to a group, which for the sake of clarity we have referred to as session participants. This approach has the benefit of verifying and validating data from multiple sources (triangulation), rather than relying upon a single source, which causes subjective bias to arise. The approach also requires an additional interviewer, where the main purpose of this person is to keep track of the participant's turns, more like a moderator. It is vital that there is a speaker queue to avoid the passionate or forceful speakers from dominating a conversation. Another process of providing rigor to the research is to ensure that there is a note-taking, as well as a recording facility. The moderator can also assist with both these roles. In the instance of this research, it was vital to ensure that the session was video recorded. It can also be seen that by following this process, data triangulation is obtained. The participants oral conversations, note taking and video recording ensured this. For our research, the data obtaining session had a panel of three people. The facilitator was responsible for describing the process and maintaining the interactivity, asking for clarification and resolving acceptable and plausible scenarios. The second panel member was responsible for moderation, which meant that this

person was responsible for deciding the order of when people spoke, and the third member of the panel recorded notes. Due to the imposed structure, the session was very interactive with all 30 participants having equal contributions in elucidating the three scenarios.

Table 1: Comparison of EFR and Participator EFR

| Task | EFR | Participative EFR |
|---|---|---|
| **Data collection** | Tape and Transcribe | Video and Transcribe |
| **Type of Interview** | One on one | Group |
| **Information source** | interviewee | Session participants |
| **Format of session** | Semi structured interview | Semi structured discussions |

One of the most important tasks of conducting an EFR study is to identify and detail scenarios to the participants. EFR identifies the content of an anticipated future in the context of a scenario. A scenario put simply, is a narrative of a likely future, it is not a projection or forecast. The scenario is akin to *"a story, an imagined future, and deals essentially with what a particular situation could, might, or is most likely to be, at a specified approximate horizon date"* (Textor, 1995: 465) . A projection can be described as "a conditional statement of what is likely to occur in the future" and a forecast is *" that projection which, in the judgment of the researcher, is most plausible or probable - as compared with alternative projections"* (Textor, 1980: 10). Although the research team can use both projections and forecasts as the foundation for the development of the different types of EFR scenarios, it is important to note that an EFR scenario is more than a collection of projections and forecasts. An EFR scenario's primary purpose is concerned with the process of change within a specific sociocultural system over the time horizon. Due to EFR's epistemological foundation, any defined EFR scenario is intrinsically impossible to validate with data because as previously mentioned the future is unknown (Mitchell, 2003). With the EFR method, the only criterion for a possible scenario is the session participant's assessment that the projected events and trends upon which their scenario is based upon, has a probability greater than zero (Textor, 1990a:144).

### *Sequence of EFR Scenarios*

EFR scenarios are extracted in a particular order based on the EFR methodological framework. The first scenario to be protracted is the optimistic scenario. This is followed by the pessimistic scenario, and then the most probable scenario. Prior to beginning the scenarios, the EFT panel must discuss two important concepts. The first is a description of the continuum. The second is framing the domain under study to ensure that all the participants are on the same wavelength

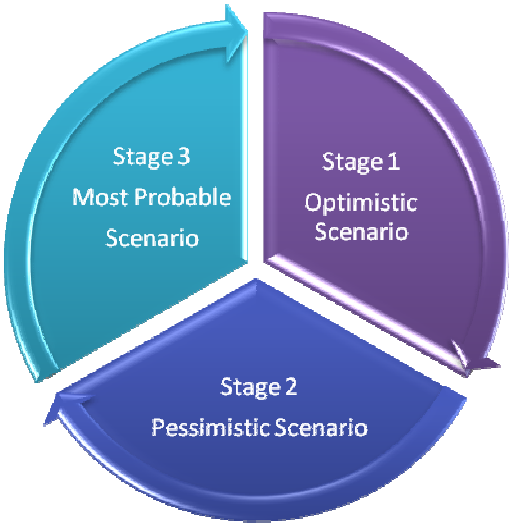


**Figure 1 : Sequence of EFR scenario elicitation**

In the session, participants should be asked to imagine a continuum of 100 possible scenarios advancing from left to right. The extreme left (Position 1) should be considered to be the least desirable possible scenario. The extreme right (Position 100) should be the most desirable possible scenario. This is illustrated in Figure 2 below. Anything that is beyond 1 is considered to be Dystopian; which is a scenario that is *definitely undesirable* but impossible. While anything that is to the right of position 100 is considered to be *extremely desirable but also impossible*. This situation is referred to as Utopian. The notion of what is possible or impossible in the future is clarified and identified by the research panel. By framing the domain prior to beginning scenario elicitation is helpful in understanding the boundaries for the discussion. Textor (1990a) proposes that the main strategy of the EFR interview as "*to 'stretch' the interviewee first in an optimistic direction, and then in a pessimistic direction - where 'optimistic' and 'pessimistic' are defined strictly and solely in terms of the interviewee's own value standards*" (Textor, 1990a, p. 147)]. Textor (1990a) continues to explain that, "The interviewee is informed that this stretching should not exceed the realm of the possible. This is, however, for [the interviewee] alone to decide. Only after this can an interviewee be asked to build his [or her] most probable scenario. From a participatory EFR perspective this is more challenging than one-on-one interviews and it means that the research panel must elicit a collective agreement from the participants on shared values, along with mutual agreement on the realm of possibilities (Textor, 1990a).

### *Describing the Stages*

The first stage involves a discussion on the optimistic scenario by persuading the participants to concentrate on a desirable future for her or his sociocultural system at approximately the 90th position on the continuum. Focusing on the 90$^{th}$ position instead of 100th alleviates the risk of the participants describing a utopian scenario. Textor (1990a) notes, "*in most EFR interviews, the optimistic scenario takes much longer to elicit than the pessimistic and most probable scenarios combined*" (Textor, 1990:148). This result also emerged when this research team used participatory EFR.

After the optimistic scenario was complete, the next stage to be elicited was the pessimistic one. Similar to the optimistic scenario a 10$^{th}$ Position "*not the very worst that could possibly occur, but clearly very undesirable*" (Textor, 1990a: 147). The concluding scenario elicited in any EFR project is the identification of the future the participants expect most- the most probable scenario. In the visualization of this scenario, all that matters is the forecast of what the participants expect to occur in their sociocultural system and by the time established as the horizon date (Textor, 1990a).

Once the three scenarios are entirely explored and the EFR interview is completed, the session is summarized into an end product. This process is referred to as the protocol (Textor, 1990a). The protocol is an elaborated, documented, and edited summary of the EFR interview (Mitchel, 2002) that "should *'make the future seem real,' so*

*that the reader can 'relate to' it*" (Textor, 1990a: 151). The protocol is published to a central point. In the instance of this study, a wiki was used to allow participants to review and comment, to correct or clarify the content.

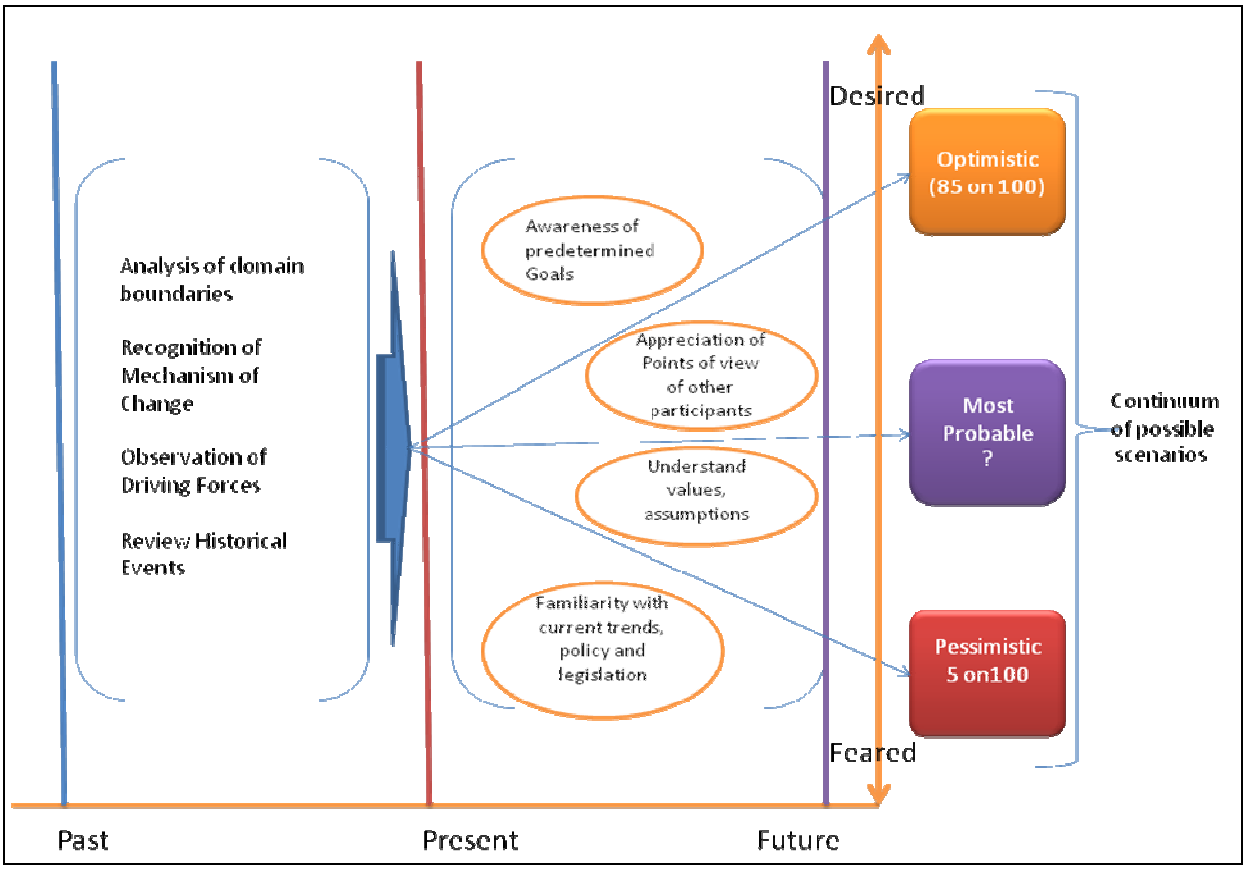


**Figure 2: EFR process**

### *Tempocentrism : How to avoid the narrow worldview*

The main problem with conceptualizing the future is what Textor (1980, 1982, 1995; Textor et al., 1985) refers to as tempocentrism. This concept is similar to ethnocentrism, and relates to the false assumption that people perceive their world based on their personal, limited cultural experience. Tempocentrism is caused by a narrow worldview in which people pay too little or inappropriate attention to the future (Mitchell, 2003). *"Tempocentrism refers to a complex psychological state, in which we become 'centered' in the wrong temporal frame"* (Textor, 1995: 464). Textor (1995) states that, "*in a world in which the pace of sociocultural change is constantly accelerating, neither ethnocentrism nor tempocentrism are appropriate stances for leaders"* (Textor, 1995, p. 465). The EFR session must be designed to handle the challenge of tempocentrism by assisting both the panel and the participant/s to cultivate the "art of anticipation" (Textor, 1995: 465). The issue of tempocentrism emerged using a two pronged approach. First, the current roadmap for mobile technology infrastructure in developing nations was discussed along with an outline of some innovative mobile applications that were being used for development activities. Second, the panel encouraged the participants to feel uninhibited in creating scenarios based on their perceptions of the problems, and ideals. They were encouraged to believe that they collectively had control over what could or would happen in the future based on the influence and talent of the participating individuals. To ensure that the discussion was within scope, the panel informed the participants that the scenarios should be kept realistic due to the EFR aim of avoiding fantasy utopias.

## Participatory EFR to elicit the Future of Mobile for Social Development

The EFR session took place during a gathering of experts at the Enabling Technology session held in the Fostering Social and Economic Development workshop in Maputo Mozambique in 2009. The aim of the EFR session was to

generate a dialogue of the potential of mobile technologies in the development sector. For the research, 30 participants from diverse backgrounds were selected. Some details are offered in table 2, with the EFR approach process being conducted after three 15 minutes presentations from experts that covered the enabling mobile technology environment. This provided a common platform for all the participants to form a common stance of the mobile technology landscape.

| Table 2 : Number of Participant by Organization Type | |
|---|---|
| **Organization** | **No of Participants** |
| Academic | 7 |
| NGO | 12 |
| Technology (devices manufacturer, consultancy, Applications developers, network operators) | 10 |
| Government / Foundations | 5 |

### *Five Elements of EFR*

There are five design components to an EFR that directs the development of the study (Textor, 1980, 1990a, 1990b). The first element is the population and culture whose future is being discussed. To allow the study to focus on a particular narrow theme, only the future of mobile for social development on the African continent was considered. This idea was pursued to avoid complicated discussions on the state of the infrastructure in other parts of the world. Toward this end, this study sought the perspectives of individuals who were exploring the boundaries of mobile technology for social development as Non-Government Organizations' (NGO's) or technology experts.

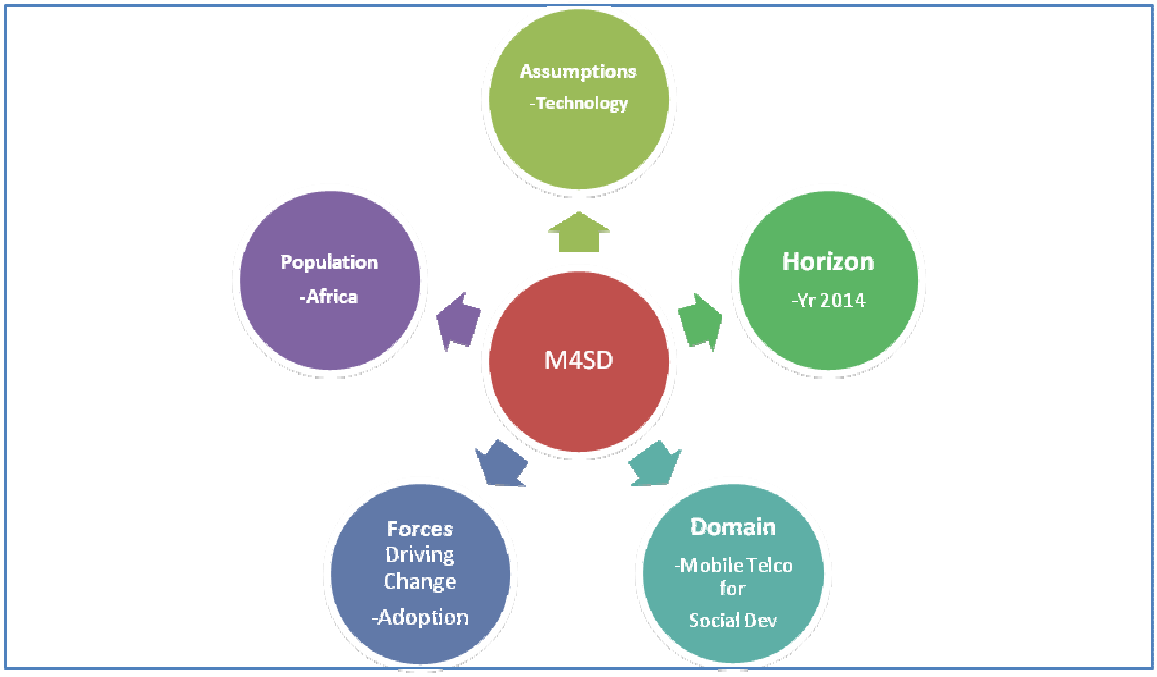


**Figure 2: Mobile for Social Development EFR Design Process**

The second element of an EFR project is the horizon date. The Horizon date is the date that a specified scenario will manifest. The horizon date used in this study was 5 years in the future, the year 2014. Typically a 20 year horizon date is used in EFT studies. A 5 year horizon was selected to reflect the rapid advances that take place in the telecommunications field. Most of the participants were active mobile technology users and not technology specialists; therefore, the emphasis was on how the technology could be used to solve problems in the near future and not how and what technology would evolve in the future. This horizon date also provided the participant/s with a sense of control of the future. The third element of an EFR project is the discovery of the domains of culture that an EFR study will explore. This study focused on the domains of people in marginalized communities in the developing world (specifically living in Africa). The fourth element refers to the identification of *"the most important forces driving broad sociocultural change" (*Textor, 1990b: 155). Two of the most important driving forces affecting this study included, a) the growth of mobile technology in the developing world; and, b) the cost of ownership of mobile technology. Other driving forces included legislation, power source, mobile applications, usage costs, and network coverage.

The final design element of an EFR project is a consideration of the culture's underlying assumptions. *"Every discussion of the future, whether in the EFR mode or any other, must proceed from certain assumptions, and it is useful to make some of these explicit"* (Textor, 1990b:154). When using a participatory EFR approach, it is important to discuss the assumptions being used prior to starting the scenario elicitation. These provide a degree of consistency between the participants. The main assumption for this study included: First, as of the horizon date, 2014, mobile technology will be the primary source of internet access for most of Africa. Second, the network expansion will continue to expand, and devices and services will continue to be affordable and being available.

## Discussion: Evaluation of EFR as an Information Systems (IS) Research method

To determine if EFR is a suitable method for IS research, it must be evaluated using an established model. This article will attempt to evaluate the model using the framework proposed by March and Smith (1995). They propose that evaluation requires the development of metrics which define what is trying to be accomplished. They suggest that the lack of metrics and failure to measure a methods performance according

to established criteria result in an inability to effectively judge research efforts. The framework proposed by March and Smith (1995) for evaluating methods considers the following criterion;

Table 3 : Research Method Evaluation Criteria Adapted from March and Smith (1995

| **Evaluation Criteria** | **Description** |
|---|---|
| Operationality | the ability to perform the intended task or the ability of humans to effectively use the method if it is not algorithmic) |
| Efficiency | ability to produce a desired effect, product, etc. with a minimum of effort, expense, or waste; or the ratio of effective work to the energy expended in producing it, as of a machine; output divided by input |
| Generality | a concept , model , framework having general application;[2] |
| Ease of use | similar to Usability. Ease of Use is a term used to denote the ease with which people can use a particular system, tool, or method to achieve a particular goal. |

### *Operationality*

The EFR method used was instrumental in providing the level of information required to guide practice. It was clear from the data gathered from the discussions that the promising mobile applications seem to be the bottom up services designed or developed by groups working closely with communities (not applications developed offshore)

[2] wordnetweb.princeton.edu/perl/webwn

that understand how mobile services can improve their lives. The main groups of applications are: mobile health, mobile agriculture, mobile activism, mobile government and mobile banking. The services that seem to invoke the most passion by users are mobile applications that take into consideration language, local content, relevant content and local ownership. There is a strong need for a process that simplifies the creation of m-services, and provides training, tools and resources to create content at the local level. This will stimulate the growth of the number of entrepreneurs, along with the creation of more critical services available to underprivileged populations. The information was extremely valuable to NGOs, Application developers, research sponsor and ERF. The literature on EFR is very effective for teaching new EFR researchers how to elicit the three scenarios (optimistic, pessimistic, and preferred) and if the guidelines are followed, the like hood of a successful session is high. However, the method does fall short in providing rigorous guidance on how to process the data once the interview session has been concluded. To effectively use this model, the researcher should use a qualitative data analysis approach that he/she is familiar with in order to process the collected data.

### *Efficiency*

EFR was very useful for eliciting the appropriate data along with the meaning of the data from a large group of users in a very short period of time. This research used a Participator version of EFR which was akin to conducting multiple interviews at the same time; thereby, making the process very efficient. The use of facilitators is key and if the EFR session is completed proficiently, the outcome will be multifaceted, contextually grounded and with creatively imagined scenarios of the real word phenomenon being studied.

The study conclusively revealed that there is definitely a need for a different ways of thinking about how mobile phone services should be created and deployed to marginalized communities in order to avoid unsustainable models. Unfortunately, there is a notion amongst decision makers that technology available in the developed world will be appropriate to developing countries, but this does not take into account culture, infrastructure and sustainability. Exploring the mobiles uses for social development along the social cultural realm provided a deeper insight that can be summarized into three main themes:

1. Explore new ideas, technologies and models for using mobile technology to deliver social benefits to marginalized communities that allows the incorporation of local generated content, themes and culture.
2. Identify approaches that remove the learning curve for deploying mobile technology for NGOS and civil society organizations considering the use of mobile technology to address specific social issues.
3. Accelerate the adoption of successful models for creating mobile social development projects for individual activism campaigns or entrepreneurs.

The use of the participator EFR approach was instrumental in sharing a level of understanding amongst the participants that would have been difficult to achieve using interviews or documentation. The Participator EFR method is very efficient for the purpose of this study, but there is a risk of the sessions breaking down, or time being used up on a single scenario if the group session is not run stringently.

### *Generality*

It is recognized that this is an initial attempt at exploring how EFR can be applied in practice. Future directions for this research include pursuing such an approach for other developing countries where mobile application usage is immensely high. By undertaking such studies, comparisons can be drawn and recommendations for ISPs, academics and government agencies that can lead to better development in underdeveloped regions and communities. This model can be used by other researchers interested in predictions of probably and preferred futures of artifacts'; however this model will be ineffective for research that aims to understand a past event or current phenomenon.

### *Ease of Use*

EFR has some benefits that allows it to be used easily and to be a conceivable approach to study themes such as mobile technology adoption in the developing nations. These include:

- The method is accessible to a single, sole researcher or a small research team with limited resources.
- The method is fairly easy to execute, but the method does require patience, training, and comprehensive knowledge of the domain under study. Alongside, good social, communication and interaction skills are

necessary to effectively execute probing issues and facilitate the interviews or interactivity within the group sessions in the correct manner.

## *Conclusion*

The aim of this paper was to identify and explain how the EFR method could be used to predict the future role of mobile technologies for social development activities in developing countries. To demonstrate the applicability and suitability of the method in practice, the paper detailed the process that was followed. By applying this approach, it was found that EFR has some advantages over other methods for conducting development research. For academic or industrial researchers, this method is beneficial as it does not require large research funding grants, elaborate artifacts, or extensive use of organizations resources to collect process and analyze the data from the study. The method is accessible to a single researcher working alone or a small research team with limited resources. However, EFR requires patience, training, and comprehensive knowledge of the domain under study. The EFR method also requires good social skill, communication proficiency and a aptitude for facilitating group interaction. These skills are required to effectively facilitate the interviews or interactivity within the group sessions in the correct manner. If the EFR session is completed proficiently, the outcome will be multifaceted, contextually ground with creative imagined scenarios of the probable, possible, and preferable futures. In addition to the scenarios, if appropriate stakeholders are present a detailed and achievable plan of action can also be elucidated for the defined time horizon that achieves the most probable future.

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